

Characteristics of U.S. Veal Consumers

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**Dept. of Agricultural Economics
Purdue University**

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Jason Henderson and Ken Foster
Dept. of Agricultural Economics, Purdue University
West Lafayette, IN 47907-1145
foster@agecon.purdue.edu
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Abstract

In response to a steady decline in U.S. veal consumption, veal producers have responded by searching for new demand opportunities. Results from descriptive analysis and a probit model of veal consumer characteristics indicates that veal is typically consumed away from home by an older, caucasian, male professional living in a metropolitan area in the Northeast. Promotion programs targeting this demographic group may provide limited gains. Promotion strategies that target consumers in other geographic regions and demographic groups for at home consumption could potentially lead to larger gains in veal consumption.

Keywords: Veal, Consumer Demographics, Probit Model

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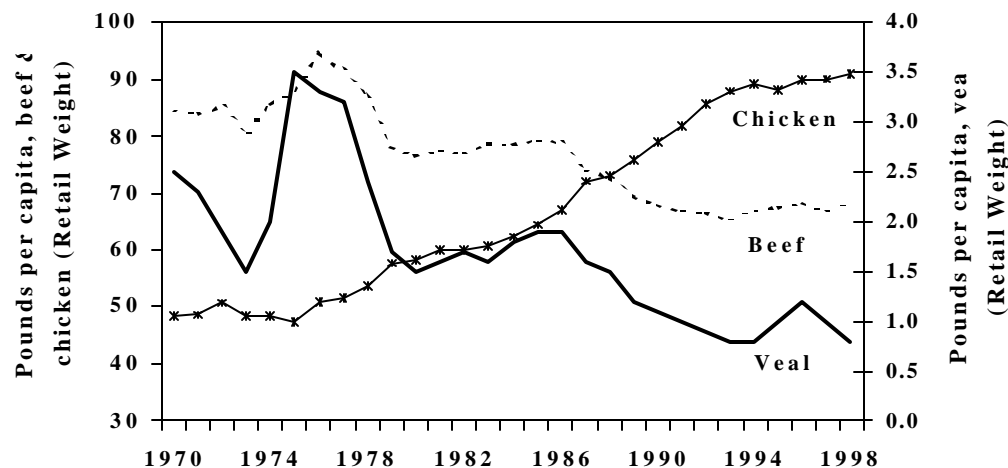
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U.S. meat consumption patterns have dramatically changed since the mid-1970s. Sharp rises in U.S. poultry consumption have coincided with substantial declines in U.S. beef consumption (Chart 1). The U.S. veal industry has not been immune to these impacts. U.S. per capita consumption was 0.8 pounds per person in 1998, down a dramatic 76.8 percent since the high of 3.5 pounds per person in 1975.

Chart 1

U.S. Meat Consumption: 1970-1998



Not surprisingly, these shifts in U.S. meat consumption have driven the veal industry to search for new demand opportunities. In order to identify new opportunities, knowledge of the current consumption pattern is vital. Only by knowing where the veal industry stands in the eyes of the American consumer can the industry chart a course for future action. Questions of who is eating veal, where and when they are eating veal, and why they are eating veal are crucial in building a marketing plan. For example, if producers feel that marketing veal, as a low fat meat item would expand consumer demand, it is essential to identify if health conscious people tend to eat veal.

The objective of this paper is to provide insight into the who, where, when, and why questions that the veal industry are asking. Data from the Agricultural Research Service (ARS)

of the U.S. Department of Agriculture that identify individual food consumption along with demographic and personal characteristics are used to address these questions. The paper opens by describing the ARS data set. Descriptive analysis of where and when veal is eaten followed by who eats veal is conducted. Analysis of why people eat veal focuses on the relationship between personal health and health consciousness and veal consumption. Finally, a probit model was estimated to statistically test the relationships between personal characteristics and veal consumption.

Data

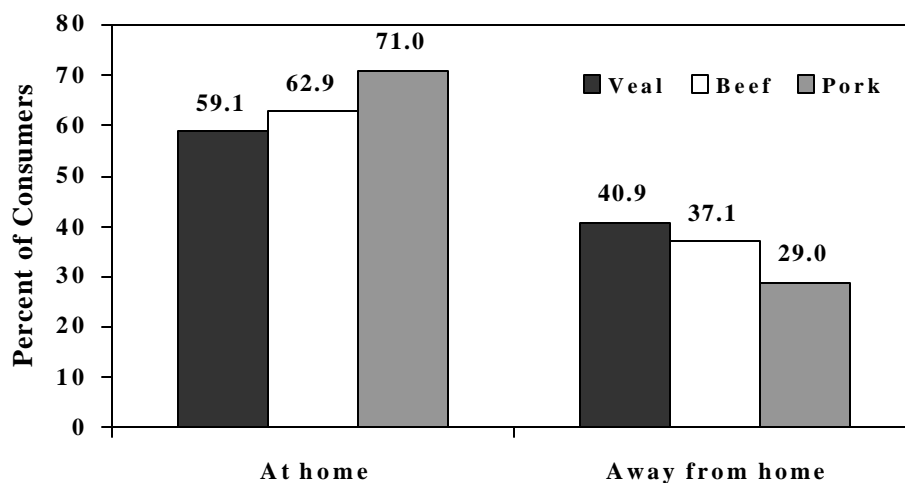
Data from the Continuing Survey of Food Intakes by Individuals (CSFII) and Diet and Health Knowledge Survey (DHKS) is used to analysis U.S. veal consumption. The Agriculture Research Service (ARS) of the U.S. Department of Agriculture compiles the data. The CSFII contains information on food and nutrient intakes for two non-consecutive days. The surveys cover a three-year time span, 1994-1996 for over 16,000 individuals across the country.

Where and When is Veal Eaten?

Out of the roughly 16,000 individuals surveyed less than 1 percent or 110 individuals reported eating veal. More veal consumers ate veal at home than away from home. However, a larger proportion of veal consumers ate veal outside the home compared to beef or pork consumers. Almost sixty percent of veal consumers ate veal at home (Chart 2). Almost all of the at home consumption was derived from veal cuts cooked in the home. Only 1 person reported eating veal in a frozen meal. The 40 percent of veal consumers reporting to eat veal outside the home was well above the percentage reported by pork consumers. The percentage of beef consumers reporting to eat beef away from home was slightly less.

Chart 2

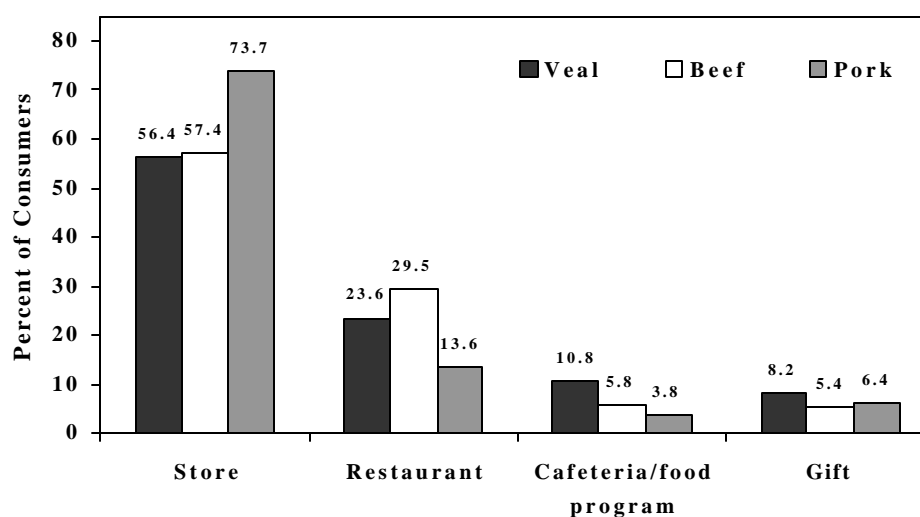
Location of Consumption



Veal was most often obtained from a store or restaurant. Over eighty percent of consumers reported obtaining veal from a store or restaurant. Ninety-three percent of veal consumers that consumed veal at home obtained veal from a store or restaurant. Over half of the consumers reporting to eat veal outside the home did so at a restaurant. While veal was more often obtained from a cafeteria or restaurant, the percentage of veal consumers who obtained veal from a cafeteria/food program or as a gift was higher than beef or pork.

Chart 3

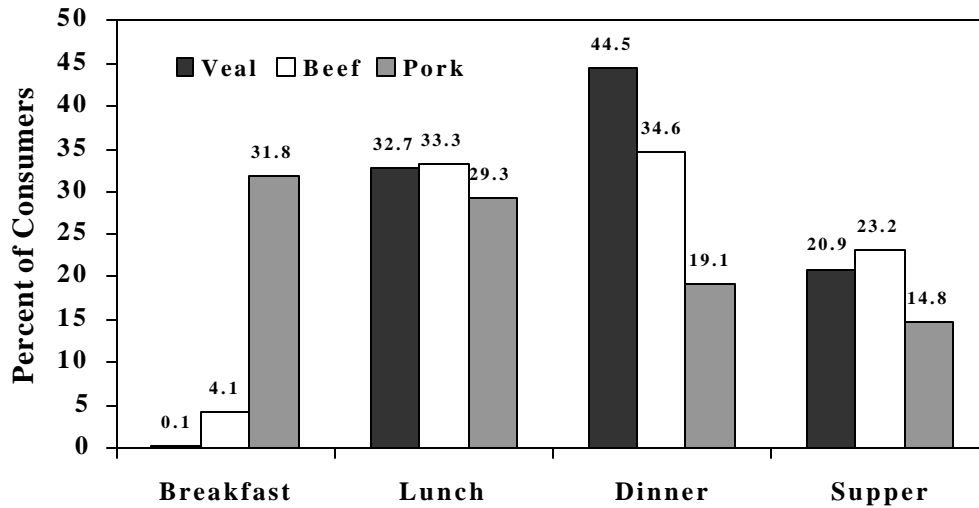
Source of Meats



Veal was almost always eaten in the p.m. hours. Roughly one-third of the people consumed veal during lunch (Chart 4). Almost one-half of the veal consumers ate veal for dinner, while twenty-one percent of them ate veal for supper. The one-tenth of one percent of veal consumers reporting eating veal for breakfast was dramatically lower than the percentage for pork producers, 31.8 percent. Compared to beef and pork, veal was more often ate during dinner, 44.5, 34.6, and 19.1 percent respectively for veal, beef, and pork.

Chart 4

Eating Occasion



In summary, analysis of where and when U.S. consumers eat veal indicated that very few people actually eat veal. Veal was often consumed in the afternoon and evening mainly at home or in a restaurant. Compared to other meats, veal was more likely to be consumed at dinner outside the home.

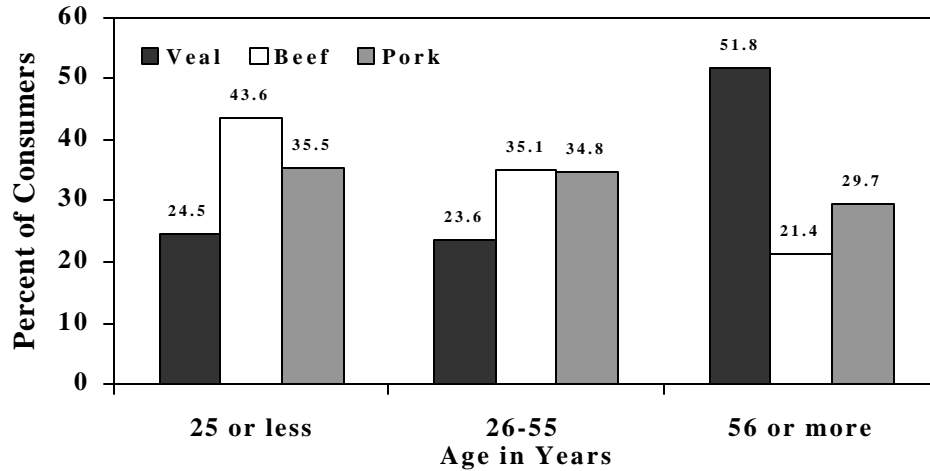
These results suggest that opportunities exist for the veal industry to build on U.S. consumption. Programs designed to build upon current consumption pattern could focus marketing veal as a dinner meal for outside the home consumption. Initiatives to extend veal consumption into untapped markets could focus veal as part of the breakfast meal. The popularity of “veal bacon” in the Northeast indicates the potential success of such a strategy.

Who Eats Veal?

The previous section indicated that few people consume veal, however the potential for growth exists. Identifying patterns among consumer demographics might point the way towards competitive opportunities for the veal industry and guide promotion strategies. This section looks at the personal characteristics of meat consumers, such as age, sex, race, income, and residence, to identify demographic patterns of veal consumption.

Chart 5

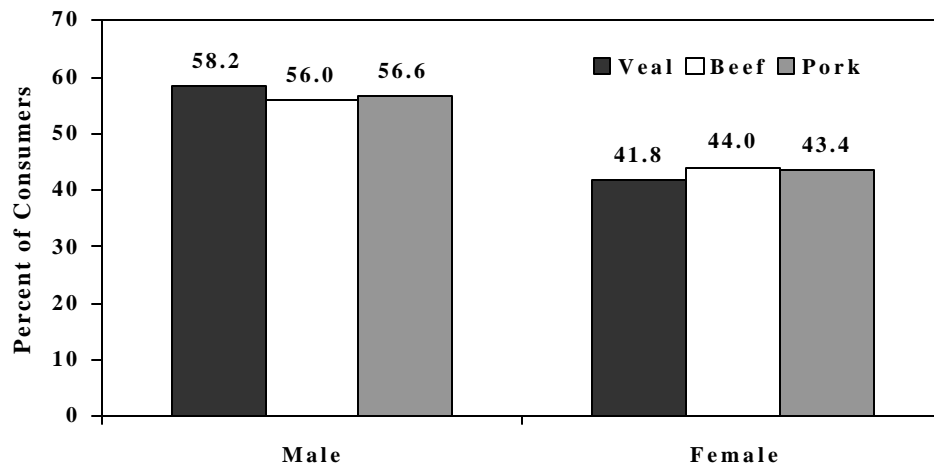
Consumers by Age



Unlike other meat consumers, veal consumers tend to be older Americans. Slightly more than one-half of the veal consumers were found to be 56 years of age or older (Chart 5). In contrast, less than one quarter of beef consumers and less than one-third of pork consumer were 56 years of age or older. Roughly one-quarter of the veal consumers were less than 25 years of age, well below the percentages for beef and pork consumers.

Chart 6

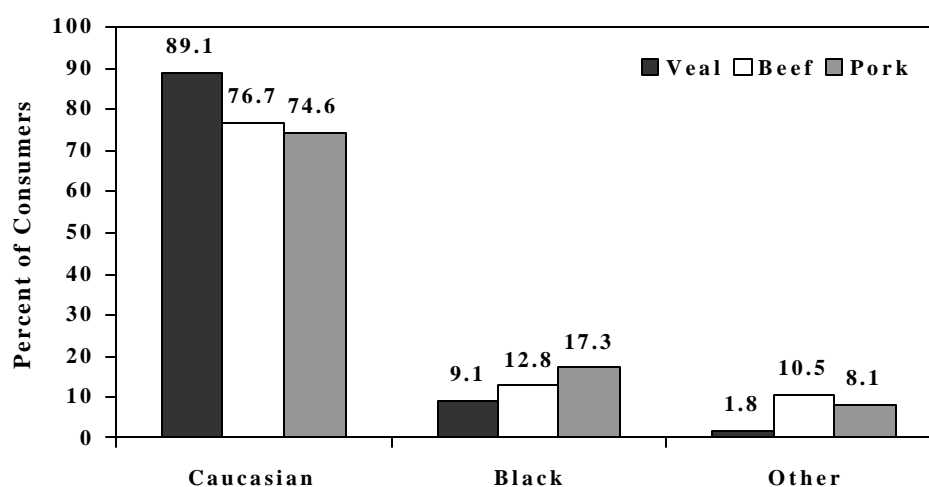
Consumers by Gender



Similar to other meat consumers, veal consumers were more often male than female. Almost 60 percent of veal consumers were male (Chart 6). The percentage of beef and pork consumers reporting to be male was slightly less than veal consumers, but still above fifty percent.

The pattern of consumption across race was similar for veal, beef, and pork. Caucasians accounted for most of the veal, beef, and pork consumption (Chart 7). Roughly ninety percent of veal consumers were Caucasian, moderately higher than beef or pork consumers. Segmenting veal consumers by gender and race revealed similar percentages. Roughly ninety percent of male veal consumers were Caucasian and a similar percentage held for women. Fifty-eight percent of the caucasian veal consumers were male and roughly forty-two percent female.

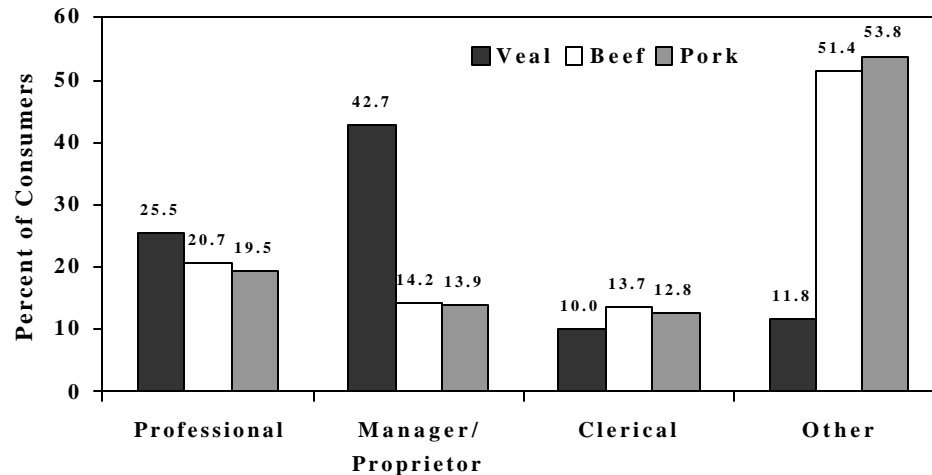
Chart 7
Consumers by Race



Most veal consumers were white-collar workers¹. One-quarter of the veal consumers reported working in a professional or technical occupation. Forty-three percent reported being a manager or a proprietor of a business. Ten percent stated they were clerical. The remaining twelve percent reported working in other occupations such as a craftsman, foreman, or operative position. In contrast, beef and pork consumers tended to be blue-collar workers. Over 50 percent of beef and pork consumers reported working as a craftsman, foreman, or operative workers.

¹ Only 52 veal consumers responded to this question.

Chart 8
Occupation of Consumers

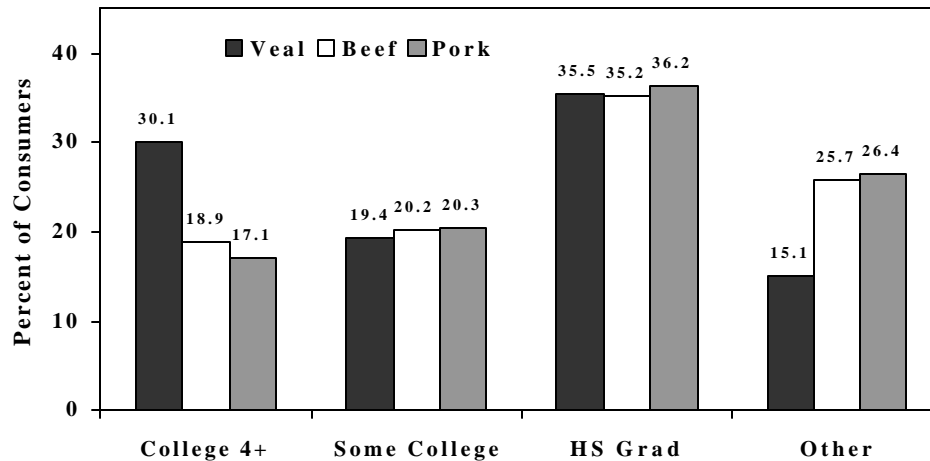


Veal consumers had more education than beef or pork consumers². One-half of the veal consumers reported at least some college education experience. Thirty percent of the veal consumers reported having four or more years of college education, while less than twenty percent of beef and pork consumers completed four or more years of college education. Fifteen percent of veal consumers had not completed a high school education. All of the people in the latter group were above 70 years of age. One-quarter of the beef and pork consumers completed a high school education. The contrast in educational experienced could in part be explained by the differences in the ages of veal, beef, and pork consumers. Recall that 25 percent of veal consumers were less than 25 years of age compared to the 44 and 34 percent for beef and pork consumers, respectively.

² Only 93 veal consumers responded to this question.

Chart 9

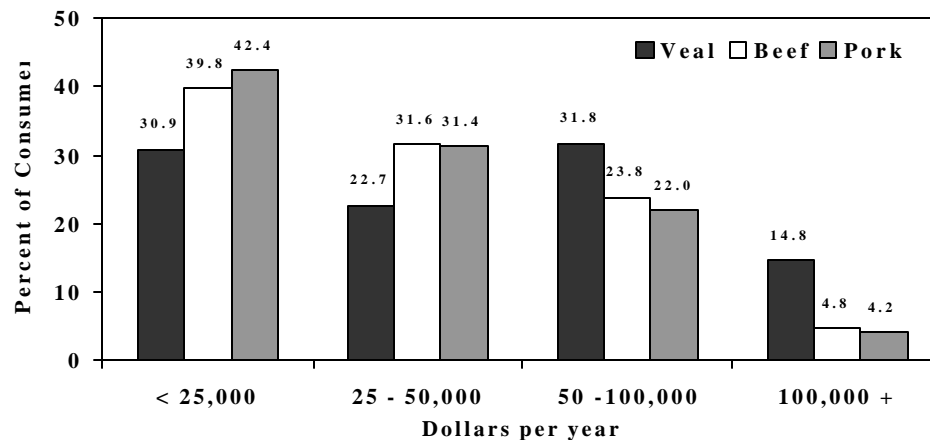
Consumers Highest Education Level



Veal consumers had higher household incomes than beef or pork consumers. The fourteen percent of veal consumers reporting household incomes higher than \$100,000 was three times higher than the percentage of beef and pork consumers. Almost one-third of the veal consumers reported incomes between \$50,000 and \$100,000, well above the percentages for beef or pork consumers. Roughly 30 percent of veal consumer reported household incomes of less than \$25,000, less than the percentages for beef and pork consumers (Chart 10). Almost one-third of the beef and pork consumers reported household incomes ranging between \$25,000 and \$50,000. Less than one-quarter of veal consumers reported incomes in the same range.

Chart 10

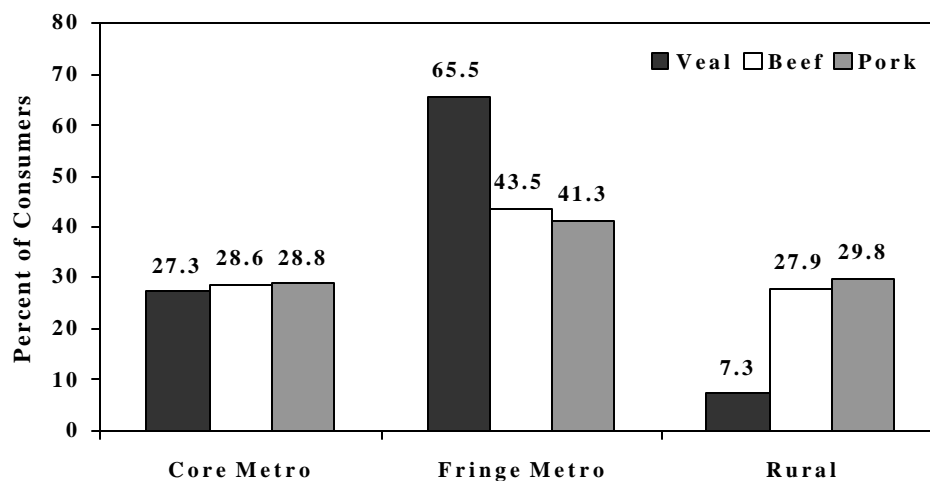
Consumers by Household Income



Most veal consumers reported living in metropolitan areas. Over 90 percent of veal consumers resided in the central or fringe metropolitan area. Two-thirds of the veal consumers resided in the metropolitan fringe. Beef and pork consumers more often lived in rural areas than veal consumers. Almost 30 percent of beef and pork consumers lived in rural areas, compared to only 7 percent of veal consumers.

Chart 11

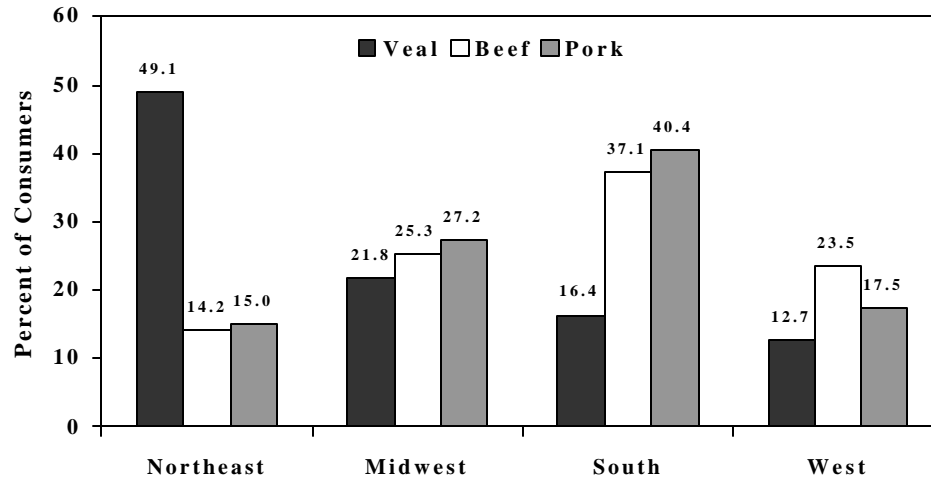
Consumers by Residence



Not only do veal consumers tend to be concentrated in metropolitan areas, but also concentrated in the states in the Northeast. Almost 50 percent of the veal consumers lived in the Northeast compared to the 15 percent of the beef and pork consumers. While only 16 percent of veal consumers lived in the South, roughly 40 percent of the beef and pork consumers lived in that region. Twenty-two percent of veal consumers lived in the Midwest. The percentage of beef consumers living in the West was almost twice as high as the percentage of veal consumers living in the West.

Chart 12

Consumers by Geographic Region



In summary, current veal consumers tend to be older, caucasian, professional males residing in metropolitan areas in the Northeast U.S with higher household incomes. The veal industry could target promotion strategies towards current consumption patterns. But with only 15.6 million caucasian males living in the Northeast, limiting the promotion strategies to this population and targeting certain occupations, household income levels, and metropolitan residents dramatically limits potential growth.

Strategies could build promotion strategies to extend the current demographic groups consuming veal. Alternative strategies could focus on promoting veal in other regions of the U.S. besides the Northeast. Attracting a younger consumer should be a priority since current consumption is amassed in an aging consumer segment. Inability to attract younger consumers will continue to downward spiral of U.S. veal consumption as older consumers pass away. Similar to beef and pork, the veal industry could focus on promoting consumption to others outside the caucasian race.

Why Do They Eat Veal?

While the previous sections described where, when, and who eats veal, added insight into why people eat veal would be beneficial. If knowledge about why consumers ate veal was known, consumption promotion strategies could be focused toward advertising the characteristics of veal that match consumer preference. One such strategy is the promotion of veal as leaner meat to match the increased health consciousness of the American consumer.

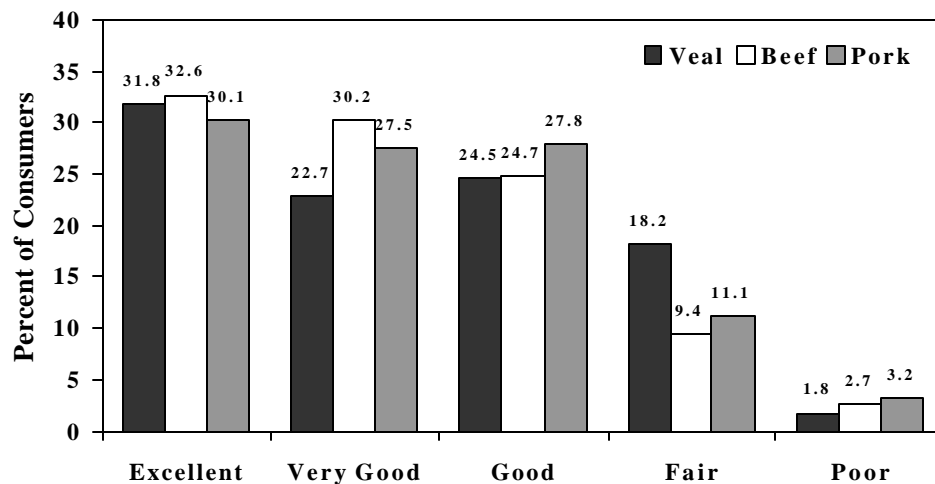
The CSFII did not provide data specific on why the consumers chose to eat veal. However, the survey did collect data on personal health and health consciousness. If consumers ate veal because of its leanness, one would expect healthier people or those that are more health

conscious (people that exercise or diet) to account for a larger proportion of veal consumers than other people.

Most veal consumers considered themselves to be in good to excellent health (Chart 13). Over one-half of the veal consumers consider themselves to be in excellent to very good health. Another quarter of the consumers reported to be in good health. Less than two percent were in poor health. However, a larger proportion of veal consumers, 20 percent, reported to be in fair to poor health than beef and pork consumers.

Chart 13

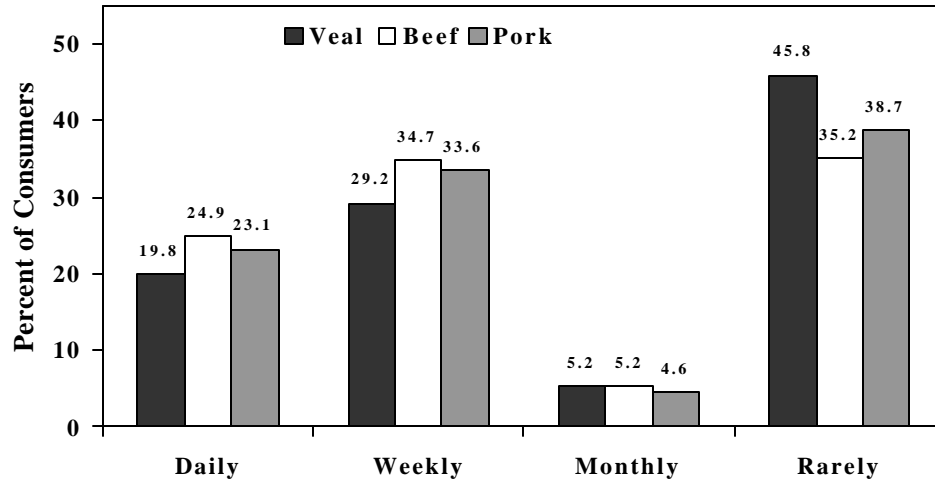
Consumers' Health



While veal consumers considered themselves in overall good health, 46 percent of them indicated that they rarely exercised (Chart 14). The percentage of veal consumers that reported to rarely exercise was higher than the percentage for beef and pork consumers. The 20 and 30 percent of veal consumers reporting to exercise daily or weekly were lower than the percentage of beef and veal consumers exercising as frequently.

Chart 14

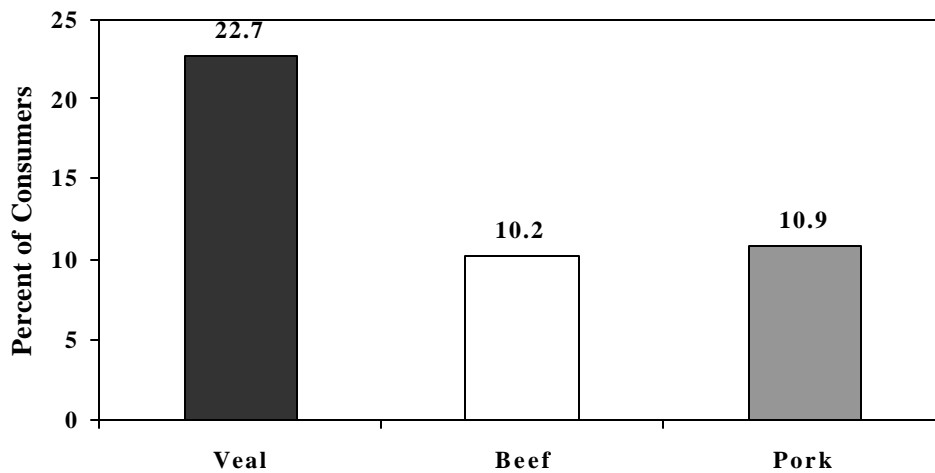
Consumers' Frequency of Exercise



Veal consumers did not tend to be on diets. Only 23 percent of the veal consumers indicated they were on diets (Chart 15). However, the percentage of dieting veal consumers was two times as high as the percentage for beef and pork consumers. Veal consumers reported a wide variety of diets ranging from low fat, low salt and low calorie to diabetic and high fiber diets.

Chart 15

Consumers on a Diet



In summary, health consciousness was not found to be a characteristic of veal consumers. This suggests that the veal industry has thus far been unsuccessful in promoting veal quality attributes. New promotion strategies could be needed to promote the health quality attributes of veal that attract a health conscious consumer.

Characteristics Influencing Veal Consumption

The descriptive analysis of the previous sections indicated that veal consumers were older, caucasian males living in metropolitan areas in the Northeast U.S. that worked in professional occupations. While the descriptive analysis was insightful, it failed to provide insight into whether these factors were more likely to lead to veal as choice consumption meat. Econometric analysis was performed on the CSFII data in order to determine the actual characteristics influencing the probability of veal consumption.

A probit regression was used to predict the probability of veal consumption and is given below:

$$(1) \quad V_i = f_i(\text{personal characteristics, health and health consciousness, residence}).$$

The variable V_i was labeled 1 if the individual consumed veal and 0 otherwise. Personal characteristics included measures of race, gender, age, household income, and education. Health and health consciousness measures accounted for personal health, dieting, and exercise. Residence factors measured whether the individual resided in a metropolitan area and the geographic region of the U.S.

Results

Due to non-responses for some of the independent variables 10,464 observations were used in the probit model. Variable descriptions and descriptive statistics are given in Table 1.

Table 1: Variable Description

Variable	Description	Mean	Std. Dev.	Min	Max
<i>Dependent Variable</i>					
VEALAMT	Veal consumed in the previous day (oz.)	0.04	0.49	0.0	14.7
<i>Personal Characteristics</i>					
CAUCASIAN	1 if white race, 0 otherwise	0.81	0.40	0.0	1.0
MALE	1 if male, 0 otherwise	0.51	0.50	0.0	1.0
AGE	Age in years	47.12	18.99	15.0	90.0
GRADE	Highest grade level in years	12.44	3.13	0.0	17.0
INCOME	Household income level (1,000 \$)	37.81	26.91	0.0	100.0
<i>Health and Health Consciousness</i>					
HEALTH	Scale: 5 if Excellent, 1 if poor	2.45	1.09	1.0	5.0
DIET	1 if dieting, 0 otherwise	0.17	0.38	0.0	1.0
EXERCISE	Scale: 5 if daily, 1 rarely	3.81	1.98	1.0	6.0
<i>Residential Location</i>					
METRO	1 if residence in metropolitan area, 0 otherwise	0.74	0.44	0.0	1.0
NE	1 if residence in Northeast, 0 otherwise	0.18	0.38	0.0	1.0
MW	1 if residence in Midwest, 0 otherwise	0.24	0.43	0.0	1.0
SO	1 if residence in South, 0 otherwise	0.36	0.48	0.0	1.0

Due to the limited response in veal consumption, the predictive ability of the estimation technique is limited and raises questions regarding the model's validity. The model failed to predict that any consumers would consume veal (Table 2). Thus the model does not adequately forecast veal consumption and its estimation qualities are questionable.

Table 2: Frequency of Actual and Predicted Outcomes

<i>Actual</i>	<i>Predicted</i>		<i>Total</i>
	<i>0</i>	<i>1</i>	
<i>0</i>	10371	0	10371
<i>1</i>	93	0	93
<i>Total</i>	10464	0	10464

Despite this feature, the probit model found five variables to be significantly related to veal consumption, V_1 (Table 3). MALE, METRO, NE, AGE, and INCOME were found to be positively significant at the $\alpha=0.05$ level. The marginal effects indicate the increased probability of veal consumption with a one-unit change in the demographic variable. Only the marginal effects of the five variables will be discussed, as they were the only variables that are statistically different from zero.

Table 3: Probit Results of Veal Consumption – Step One

	Coeff.	Std. Dev.	T-Ratio	Marginal Effect
Constant	-4.008	0.335	-11.974	
CAUCASIAN	0.088	0.121	0.726	0.0014
MALE*	0.160	0.084	1.913	0.0025
AGE*	0.009	0.002	3.544	0.0001
GRADE	0.014	0.015	0.932	0.0002
INCOME*	0.005	0.002	2.933	0.0001
HEALTH	0.036	0.042	0.854	0.0006
DIET	0.076	0.100	0.758	0.0012
EXERCISE	0.017	0.022	0.779	0.0003
METRO*	0.377	0.133	2.842	0.0058
NE*	0.490	0.122	4.018	0.0076
MW	0.194	0.130	1.491	0.0030
SO	-0.094	0.138	-0.686	-0.0015

Significant at the $\alpha=0.05$ level.

The probit model indicated that residing in the Northeast increased the probability of eating veal 0.76 percent more than residing in the excluded West region. Persons living in a metropolitan area were 0.58 percent more likely to eat veal than persons living in rural areas. The probability of consuming veal also increased 0.01 percent with every \$1000 of additional household income. A person with a household income of \$100,000 were 0.5 percent more likely to consume veal than a person with \$50,000 of household income. The results also indicate that an additional year of age increased the probability by 0.01 percent. Thus, the probability that a 65 year old consumed veal was 0.4 percent higher than a 25 year old. Males also had a 0.25 percent higher probability of eating veal than females.

These findings support the analysis in previous sections indicating that veal consumers tend to be older males living in metropolitan regions in the Northeast with higher incomes. It was surprising; however, to find that race characteristics were not significant. Almost ninety percent of veal consumers were caucasian. It was expected that the race variable, CAUCASIAN, would be significant.

Conclusion

Declining consumption of veal by U.S. consumers raises many concerns for continued successfulness of firms in the veal industry. Insight into the veal industry's customer base could guide future market promotion strategies. CSFII data on individual food consumption in the U.S. between 1994 and 1996 were used to analyze veal consumption patterns. Descriptive analysis and a probit model were applied to the data.

Descriptive results indicated that the typical veal consumer was an older, white, male professional living in a metropolitan area in the Northeast with higher household income. Veal was consumed away from home at dinner. However, personal characteristics, health and health consciousness, and residence location were not found to be associated with the quantity of veal consumed. Results from probit model were generally consistent with the descriptive results. Older, males with higher incomes living in metropolitan areas in the Northeast were associated with veal consumption.

These results indicate that guiding promotion programs of veal consumption toward current demographic groups may provide some positive, but limited gains. The population of older white males living in the metropolitan areas of the Northeast is a small population set of the total U.S. population. Limit this set to older people with higher income levels in metropolitan area and the population of potential consumers is small. Increasing consumption in this demographic group will provide some benefits, but small considering the small size of this group.

Promotion strategies that broaden the consumer base in other regions and other demographic groups might be the most promising for the veal industry. With increased migration, the potential for veal consumers moving to other regions is more probable today. However, the strategy would first need to address why people in the Northeast are more likely to consume veal than in other regions. One would expect the larger consumption to be based on consumers' heritage, such as Italians, however the CSFII data does not provide this ethnic breakdown to test this hypothesis. Additional studies investigating the reasons veal consumption is higher in the Northeast could provide some beneficial information. If it is discovered that consumption is higher due to a concentration of Italian populations, promotion strategies could target Italian communities in other regions.

Promoting veal consumption among younger people should be seriously considered by the veal industry. The inability to attract younger consumers to consume veal could accelerate a decline in veal consumption in the future as older consumers die. Given that older consumers are

the largest group of veal consumers, the veal industry should target promotion strategies to younger consumers to maintain future demand.

Extending veal consumption outside the away from home at dinner category could also broaden the veal market. “Veal bacon” has gained some popularity in the Northeast. Strategies building on this initial success could extend future veal consumption.

One problem with this study emerges from the omission of price data in the CSFII data set. The findings suggest that consumers have higher incomes emerging from professional occupations. This could be due to the generally higher price for veal than beef or pork. The U.S. average retail price of veal was \$5.04 per pound 1998 (Urner Barry). The retail price of beef and pork was \$2.77 and \$2.42 per pound, respectively. Consumers might have higher incomes because only high-income people can afford to eat veal. Given the higher price of veal, the veal industry must also consider what types of beef cuts are the actual veal competitors. The high price of veal would probably limit its ability to compete with hamburger, but not steaks.

Insight into the demographic characteristics of veal consumers had identified some areas of concern and opportunities for the veal industry. If the veal industry is to halt the decline in veal consumption in the near future, it must reach a new consumer base. Identifying who eats veal, when they eat veal, and where they eat veal has provided some valuable insight. Now the industry must design promotion strategies to expand veal consumption.

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